Army Photovoltaic Investment Analysis

U.S. ARMY

Center for Army Analysis

Briefing for the Energy Harvesting Conference

Hugh Jones
Resource Analysis Division
703-806-5389
jones@caa.army.mil

Purpose

To provide the conference an update on efforts to collect primary data and analyze the costs and benefits of using photovoltaic systems in support of the *energy needs* of deployable Army forces.

Background: ***Power Trend Examples***

U.S. ARMY

Center for Army Analysis

Army Tactical Command and Control System

"Off the Garrison Grid" Power Requirement

1. **Digitized Tactical Ops Centers require more power** because of digitized maneuver control, counter battery, comms and other changes. (Per 2ID G3, June '98)

2. Force XXI, Battle Command Brigade and Below **"Active Color"** screens require 100% more power per unit than a "Monochrome" unit. (Per Litton Systems, Calif.)

3. All Force XXI vehicles are being **refit with 100 - 200 amp alternators** up from 60 amp alternators. (Per Force XXI Electrical Demonstration Report, Ft. Hood, Tx)

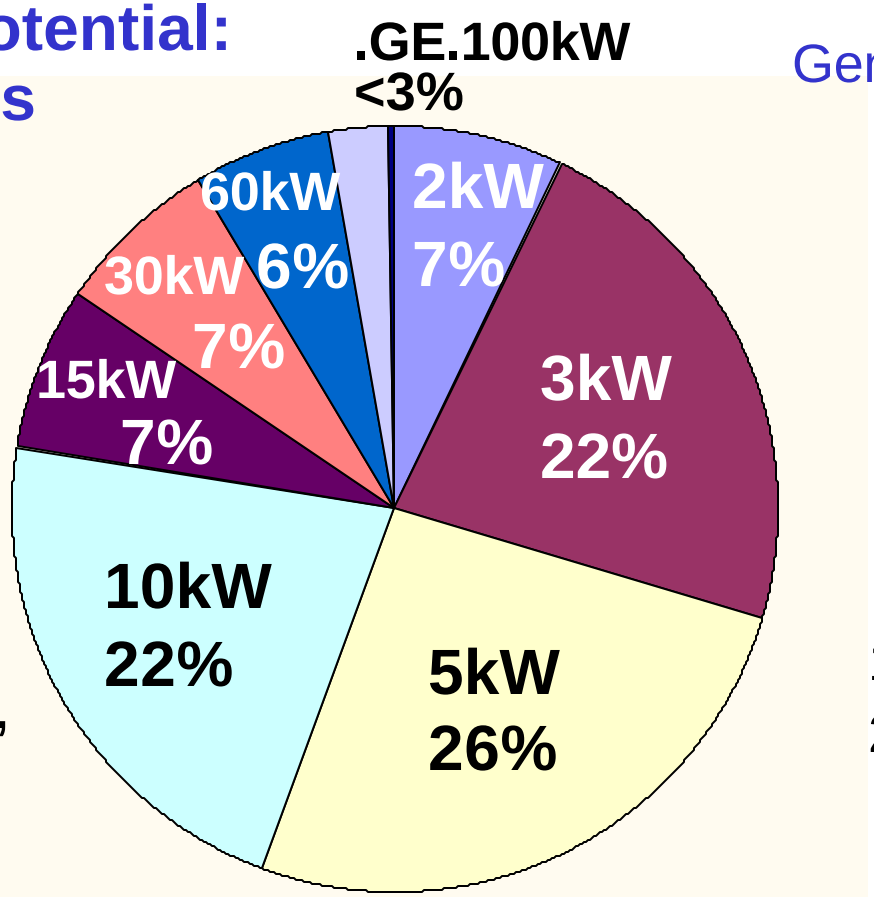
Background: Analysis of PV System Potential

U.S. ARMY

Center for Army Analysis

PV Generator Potential: Army Generators (On-Hand)

- Includes Reserves
- Does not include Auxiliary Power Units (APUs), Starters, Lights, Ignition (SLI)



Gen Type	# Systems
2kW	4139
3kW	13030
5kW	14960
10kW	12809
15kW	3984
30kW	4035
60kW	3342
100kW	1517
200kW	102
Total Generators	57918

Strategy is to concentrate on 2kW, 3kW and 5kW generators which comprise 55% of the total generator potential. Similar mobile PV systems can:

- Be obtained commercially "off the shelf"
- Can handle typical loads of 10 - 60 amps

Ft. Bragg: Case Study # 1

U.S. ARMY

Center for Army Analysis

Does investment in mobile PV for Army deployable forces provide value added?

Investment Criteria:

- Operations
- Economics
- Pollution Prevention
- Energy Savings

---

2 Cases Analyzed:

- Conventional Case
  - – Generator provides power in the field (100% of mission amp hour requirement supplied by generator)
- PV Case
  - – PV provides primary power in the field (80% of mission amp hour requirement supplied by PV, 20% by generator)
  - – Generator assist (used in addition to sun for PV battery recharge)